

WHAT IS CLAIMED IS:

1. A device for controlling a characteristic of an image signal superimposed on a specimen image, comprising:
a main optical system configured to refract light emitted from a specimen into a main beam path;
a superimposition apparatus in a fixed relationship to the main optical system, configured to generate the image signal;
a superimposing reflector configured to reflect the image signal generated by the superimposition apparatus into the main beam path and to superimpose the image signal onto the specimen image;
an image measurement unit in a fixed relationship to the main optical system, configured to measure a characteristic of the specimen image; and
a controller configured to adjust a characteristic of the image signal generated by the superimposition apparatus in response to a measurement by the image measurement unit of the characteristic of the specimen image.
2. The device as in claim 1, wherein the characteristic of the specimen image and the characteristic of the image signal are brightness.
3. The device as in claim 2, wherein the image measurement unit is configured to measure a spatial brightness distribution of the specimen image.
4. The device as in claim 1, wherein the characteristic of the specimen image and the characteristic of the image signal are one of color and contrast.
5. The device as in claim 4, wherein the image measurement unit is configured to measure a spatial color or contrast distribution of the specimen image.
6. The device as in claim 1, wherein the superimposition apparatus is one of a display and monitor.

7. The device as in claim 1, wherein the image measurement unit is configured to measure the characteristic of the specimen image by directly measuring light emitted from the specimen and not refracted by the main optical system.
8. The device as in claim 1, wherein the image measurement unit is configured to measure the characteristic of the specimen image by measuring light emitted from the specimen and refracted by the main optical system into the main beam path.
9. The device as in claim 8, further comprising a beam splitter configured to reflect a portion of the specimen image from the main beam path to the image measurement unit.
10. The device as in claim 1, wherein the image measurement unit is configured to measure a characteristic of the entire specimen image.
11. The device as in claim 1, wherein the image measurement unit is configured to measure characteristics of individual regions of the specimen image.
12. The device as in claim 11, wherein the individual regions are individual pixels.
13. The device as in claim 11, wherein the image measurement unit is configured to measure characteristics of those individual regions that are in a viewer's line of sight.
14. The device as in claim 1, wherein the controller is configured to adjust a characteristic of the entire image signal generated by the superimposition apparatus in response to the measurement by the image measurement unit.

15. The device as in claim 1, wherein the controller is configured to adjust characteristics of individual regions of the image signal generated by the superimposition apparatus in response to the measurement by the image measurement unit.
16. The device as in claim 15, wherein the individual regions are individual pixels.
17. The device as in claim 16, wherein the controller is configured to adjust characteristics of individual pixels of the image signal generated by the superimposition apparatus in response to measurements by the image measurement unit of the characteristics of the corresponding pixels of the specimen image.
18. The device as in claim 15, wherein the controller is configured to adjust characteristics of individual regions of the image signal generated by the superimposition apparatus in response to measurements by the image measurement unit of the characteristics of the corresponding regions of the specimen image.
19. The device as in claim 1, further comprising a manual input unit for providing a manual input signal from a viewer to the controller, wherein the controller is configured to adjust the characteristic of the image signal generated by the superimposition apparatus in response to the manual input signal and the measurement by the image measurement unit.
20. The device as in claim 19, wherein the manual input unit is operable remotely from the device.

21. The device as in claim 1, wherein the image measurement device is one of a video camera and a CCD.
22. A method for controlling a characteristic of an image signal superimposed on a specimen image, comprising:
providing a specimen;
producing a specimen image for viewing by a viewer;
measuring a characteristic of the specimen image;
generating a control signal based at least in part on the characteristic of the specimen image;
producing an image signal having a characteristic that is controlled by the control signal; and
superimposing the image signal on the specimen image for viewing by the viewer.
23. The method as in claim 22, wherein the characteristic of the specimen image and the characteristic of the image signal are one of brightness, color, and contrast.
24. The method as in claim 22, wherein measuring a characteristic of the specimen image comprises reflecting a portion of the specimen image via a beam splitter toward an image measurement unit.
25. The method as in claim 22, wherein producing an image signal comprises producing an image signal having individual regions, wherein characteristics of the individual regions are separately controlled by the control signal.
26. The method as in claim 25, wherein the individual regions are individual pixels.

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27. A device for controlling a characteristic of an image signal superimposed on a specimen image, comprising:
a microscope configured to produce a specimen image;
a superimposition apparatus in a fixed relationship to the microscope, configured to generate the image signal; and
an image measurement unit in a fixed relationship to the microscope, configured to measure a characteristic of the specimen image, wherein a characteristic of the image signal generated by the superimposition apparatus is automatically adjusted in response to a measurement by the image measurement unit of the characteristic of the specimen image.
 28. The device as in claim 27, wherein the microscope is a surgical stereomicroscope.
 29. The device as in claim 27, wherein the characteristic of the specimen image and the characteristic of the image signal are brightness.
 30. The device as in claim 27, wherein the characteristic of the specimen image and the characteristic of the image signal are one of color and contrast.
 31. The device as in claim 27, wherein characteristics of individual regions of the image signal generated by the superimposition apparatus are individually adjusted in response to measurements by the image measurement unit of characteristics of corresponding regions of the specimen image.
 32. The device as in claim 31, wherein the individual regions of the image signal and the corresponding regions of the specimen image are pixels.